As a result, any large increases in productivity achieved by increasing the number of subscribers are largely completed at this point. In fact, as we noted in our previous paper, LEC Video Dialtone offerings provide alternatives to potential cable subscribers. DBS and terrestrial wireless systems may also compete with cable.[12] Therefore, the growth in cable penetration might be expected to slow even further.

An empirical study to distinguish between the effects of technological progress and the effects of scale and scope economies might be attempted. Such a study would encounter difficult econometric problems. Identifying the separate effects of technological progress and historic market growth would be problematic because those two independent variables are correlated. This makes it difficult to differentiate between the statistical effects of the two variables.[13] This would not necessarily be a problem if the two variables were expected to remain correlated in the future. However, as noted above, past growth and projected growth are likely to differ.

In our earlier paper, we noted that the imposition of regulation will likely reduce future productivity growth in the cable industry. The 1992 Cable Act and the detailed regulations implementing that Act that have been adopted by the Commission impose substantial burdens on the cable industry. If anything, the rules have become more complicated since we wrote our first paper on productivity. Compliance with these regulations will raise industry costs, offsetting historical productivity trends that might otherwise apply.

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[12] For a discussion of the competitive prospects for these technologies, see Leland L. Johnson, Toward Competition in Cable Television (1994), pp. 111-148.

[13] See J. Johnston, Econometric Methods (1960), p. 201.

All of these factors indicate that even if an empirical study were to show productivity increases beyond the economy-wide average, the results should not be extrapolated into the future.

III. TECHNOLOGICAL TRENDS DO NOT PROVIDE A RATIONALE FOR APPLYING A PRODUCTIVITY FACTOR TO CABLE

The cable industry is undergoing extreme changes. While the basic services offered by telephone companies have been stable for decades, in the past thirty years, the cable industry has developed from the fledgling purveyor of community antenna services used mainly to improve reception in remote areas to the multi-media conglomerates that many firms are today. The industry has changed dramatically even within the past ten years, with the onset of larger systems, and new services such as pay-per-view. This rapid pace of change is continuing.

Given the proper incentives, cable companies will make substantial investments over the next decade to deploy new technology in their networks. Key examples include the deployment of fiber optics transmission to replace part of the coaxial runs, digital transmission, digital compression to increase the bandwidth utilization, and back-up power systems.

Some of these changes will provide substantial benefits to subscribers of regulated services. In particular, system reliability will improve, as will the quality of the reception, through the use of fiber optics transmission and back-up power systems. However, cost reductions, which are required if there are to be productivity improvements beyond those inherent in the benchmark system, will not necessarily follow from these developments. Several reasons why such productivity gains cannot be assumed follow.

It might be assumed that increasing the total channel capacity in a given system would lead to a substantially lower cost of the basic service channel component of that system, implying a resulting increase in productivity. However, the benchmark formula already recognizes this phenomenon. For example, as the number of regulated channels grows from 10 to 20, rates can be adjusted by $0.12. But when the number of channels grows from 20 to 40, the allowed per channel rate is adjusted by only $0.03. This adjustment is intended to reflect the per channel economies of larger systems.[14]

Moreover, capacity in the cable industry is added in large increments through system rebuilds and upgrades. In many cases, systems must be completely rebuilt in order to increase capacity. A considerable capital cost is associated with such upgrades and rebuilds. The compression technology and other equipment required to derive the benefits of the increased capacity are expensive to implement. The initial effect of these major investments is likely to be increases in the rates for regulated services, not rate reductions.[15]

In addition, there is at this point relatively little experience with the operational costs of a hybrid fiber-coaxial network compared to those associated with a traditional all-coaxial network.

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[14] See Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation, MM Docket No. 92-266, Fourth Report and Order, released March 30, 1994, note 349 and Appendix C, Table A-3. Regulated ratepayers will not see the benefits of these economies if the cable operator does not choose to add regulated channels when it expands. However, this would be a direct result of the Commission decision to adopt "tier neutral" regulation. Problems with tier neutral regulation are discussed in Daniel Kelley, "The Social Costs of Tier Neutral Regulation," June 21, 1993.

[15] The Commission's plan to help cable companies to finance network upgrades through abbreviated cost of service filings recognizes this phenomenon. See Implementation of Sections of the Cable Television Consumer Protection and Competition Act of 1992: Rate Regulation, MM Docket No. 93-215 and Adoption of a Uniform Accounting System for Provision of Regulated Cable Service, CS Docket No. 94-28, Report and Order, paras. 280-291.

To the extent that operational cost savings may accrue, they may be more than offset by the cable industry's increasing emphasis on better quality and higher reliability, which translate into increased expenditures for maintenance personnel and systems. Thus any assumption that there will be productivity gains due to reduced operational costs would be conjecture at this point.

Finally, it is difficult to infer what path productivity changes will take in the future because the industry is developing and implementing a number of alternative approaches to delivering services over new technologies. Thus, for instance, some companies are deploying fiber to the level of 2000 homes passed; others to as few as 200-500 homes. Some will utilize digital transmission to carry existing channels; others may continue to use analog transmission. Some may utilize digital compression even for existing services; others are likely to do so for video on demand and other new video services. And some may ultimately integrate the carriage of both existing and new video services into a common switched transport scheme, such as that based on the use of Asynchronous Transfer Mode (ATM), while others may continue to send existing programming in NTSC format while using ATM for new video and broadband telecommunications services.

Why these differences? Because for now, and for the foreseeable future, there is not a single clear-cut choice of technologies; rather, there are many promising approaches which all need to be explored, several of which may turn out to be viable, and which may impact productivity in quite different ways at quite different times. The near-term effect of many of these changes may even result in negative measured productivity changes as investments are made to increase capabilities and quality.

This can be contrasted with the case of local telephone service. Technology introductions have not required complete rebuilds. Incremental changes are allowing enormous productivity benefits to be realized. Telephone companies are now contemplating expensive system rebuilds. However, they are doing this in order to compete with cable companies through the provision of video dialtone, not to provide better telephone service.

IV. APPLICATION OF A PRODUCTIVITY OFFSET TO THE CABLE INDUSTRY WOULD IMPOSE SOCIAL COSTS

The Commission already adopted a strict regulatory regime that has significantly constrained cable rates. By imposing a productivity factor on top of the system already in place, there can only be one of two results. First, a larger number of cable companies will be forced to resort to full-scale rate of return showings in order to ensure that they make a reasonable rate of return. This will increase the cost of cable regulation. This cost must ultimately be paid by the public.

The second alternative is that cable companies will reduce their expenses. Unlike the situation confronting the telephone industry when price caps were imposed, the cable industry does not have an option to cut costs without cutting quality or quantity of service. Cable companies were unregulated for many years, and therefore were not operating under the regulatory distortions that likely led to cost-padding in the telephone industry. This means that cost-cutting induced by stricter regulation of the cable industry will result in reduced investment, fewer services, and less attention to quality and reliability. These results would be in direct

conflict with the Clinton-Gore Administration plan to encourage the development of a National Information Infrastructure (NII).[16]

V. THE COMMISSION HAS IMPOSED TRADITIONAL COMMON CARRIER REGULATION ON THE CABLE INDUSTRY

The Commission asserts that it has not imposed Title II regulation on the Cable industry.[17] It argues that cost of service regulation is a backstop to benchmark regulation, and that some elements of common carrier regulation, such as detailed cost support and annual filing requirements, are absent from cable regulation.[18] In fact, the overall cable rate regulation scheme adopted by the Commission appears to be based on the common carrier approach. Many of the undesirable economic effects will certainly be the same, but the benefits are less clear.[19]

In Alfred Kahn's classic text on the economics of regulation, the chapter devoted to "the traditional issues in the pricing of public utility services" discusses the three major tasks involved in regulating the rate level. These are: supervision and control of operating costs and capital outlays, determination of the "rate base," and selection of the permitted rate of return.[20] In its model for regulating the rates of dominant common carriers, the Commission engages in all three

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[16] See The White House, Office of the Vice President, "Vice President Proposes National Telecommunications Reform," January 11, 1994.

[17] See Notice, para. 25.

[18] Detailed cost support and annual filing requirements were actually late additions to the common carrier regulation model.

[19] See Daniel Kelley, "Economics of Cable Television Regulation," January 27, 1993.

[20] The Economics of Regulation, 1st ed., vol. 1, chapter 2.

activities to a greater or lesser degree at one time or another. The cable regulation model adopted by the Commission will also involve the Commission in all three areas.

The interim cost of service rules are based on nothing less than full implementation of rate base/rate of return regulation.[21] Some of the rules needed to implement this approach would apply to all regulated cable firms, whether or not they choose to file rate cases. For example, the Commission is proposing that all firms keep records according to a uniform system of accounts (USOA) similar to that imposed on the telephone industry. The telephone company USOA is the foundation on which rate of return regulation of common carriers is based.

The Commission had an opportunity to reduce the burdens associated with traditional regulation. For example, it could have distinguished between the regulatory treatment of basic and cable programming services in order to target regulation only to the subset of firms charging clearly unreasonable rates. Instead, by failing to distinguish between basic and cable programming, the Commission is in the position of having to regulate the rates of virtually the entire industry.

Instead of merely providing an ad hoc backstop that would allow certain firms to make a showing that benchmark regulation would result in confiscatory (low) prices, traditional rate regulation principles have become a significant element of the entire Commission cable rate regulation scheme.

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[21] See FCC Form 1220, Instructions for Completion of Cost of Service Filing for Regulated Cable Services, which is a classic rate of return regulation manual.

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REGULATORY PARITY AND PUBLIC POLICY

Prepared for

Time Warner Entertainment Company, L.P.

by

Daniel Kelley and Robert Mercer

Hatfield Associates, Inc.

September 14, 1993

REGULATORY PARITY AND PUBLIC POLICY[1]

Several local exchange carriers (LECs) have filed Comments asking the Commission to establish regulatory parity between themselves and cable television companies.[2] We have been asked by Time Warner Entertainment Company, L.P. to provide an analysis of the regulatory parity issue. The statements of Robert L. Townsend and Richard D. Emmerson filed on behalf of Bell Atlantic, the NYNEX Telephone Companies and the Pacific Companies provide the most extensive discussion of the issues. Therefore, we will focus on those statements.

I. SUMMARY AND CONCLUSIONS

Dr. Emmerson argues that the cable television and telephone industries should be regulated identically in order to promote economic efficiency. The opposite is true. Regulated telephone services and regulated cable services are provided in quite different market circumstances. Given the dramatically different demand and supply situations in the two industries, there is no valid efficiency justification for increasing regulatory burdens on cable television companies in order to establish "regulatory parity."

Dr. Emmerson believes that LECs should be less regulated than they are today. But either inappropriate regulation of cable television companies or inappropriate deregulation of LEC services will actually reduce the long term prospects for competition. Inadequate regulatory safeguards will allow LECs to behave anticompetitively. Inappropriately strict

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[1] Daniel Kelley has filed statements in earlier stages of this proceeding. Robert Mercer's resume is attached.

[2] See the Comments of GTE, Comments of BellSouth and Joint Comments of Bell Atlantic, the NYNEX Telephone Companies, and the Pacific Companies.

regulation of cable companies will reduce their ability to become viable local exchange competitors.[3]

Mr. Townsend addresses the issue of cable industry productivity. He argues that the price cap formula that will be used to adjust benchmark rates should contain a productivity offset that matches the productivity offset in the LEC price cap formula. Mr. Townsend has produced no quantitative studies of productivity change in the cable business.[4] Even if historical studies had been produced, they would be of little relevance to future productivity trends in the cable television business.

Instead of providing measurements, Mr. Townsend provides an heuristic description of technological changes underway in the cable business, and then concludes that the factors driving productivity change in the local exchange and cable television businesses are similar. In fact, the two businesses start out with dramatically different system architectures and there is no basis for concluding that past or future productivity trends in the two industries are identical. Thus, there is no basis for concluding that productivity offset implicit in the Commission's existing price cap formula is inadequate.

Dr. Emmerson and Mr. Townsend fail to understand the regulatory scheme contained in the 1992 Cable Act and implemented by the Commission. For example, productivity increases being experienced by cable television programmers will be reflected in external

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[3] As discussed below, this may explain the involvement of some LECs in this proceeding.

[4] This is not a surprise, given the enormously difficult and time consuming task that generating reliable productivity data would require. See the Statement of Economists Incorporated filed with the Comments of the National Cable Television Association, and the Statement of David Roddy filed with the Comments of Continental Cablevision, Inc.

adjustments to the price cap. Yet Mr. Townsend argues that these productivity increases should contribute to an offset to the price cap adjustment. He also makes much of productivity increases for services that are not regulated.

The primary means by which cable television companies will be regulated is through the Commission's benchmark formula. If benchmark regulation is implemented correctly, rate of return regulation should be the limited exception in the industry. This makes much of Dr. Emmerson's discussion of the incentives that cable operators would face under rate of return regulation irrelevant. Moreover, as the Commission recently noted, Congress specifically ruled out common carrier regulation for the cable industry.[5]

Productivity issues are discussed in Section II. Section III addresses the incentives created by rate of return regulation.

II. THERE IS NO BASIS FOR A CABLE INDUSTRY PRODUCTIVITY OFFSET

Mr. Townsend's characterization of cable television technology is incorrect. Therefore, his declaration casts little or no light on the three primary technical and economic issues at stake in this proceeding, namely:

- What is the historical pattern of productivity change in the cable industry?
- Can historical productivity trends be projected into the future?
- Is there any correlation between cable system and LEC productivity, and, more cogently, between the respective changes in their productivity?

These issues are discussed below.

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[5] See First Order on Reconsideration, Second Report and Order, and Third Notice of Proposed Rulemaking, released August 27, 1993, at para. 90.

A. What is the Historical Pattern of Productivity Change in the Cable Industry?

The Commission pointed out in the Notice that a one factor index, such as output per man hour, is the simplest measure of productivity. However, there are conceptual difficulties with this simplistic approach. For example, labor productivity will rise if output rises due to capital expenditure increases. However, the firm's overall productivity will not increase by the same amount because of the increased capital expense. Therefore, a total factor approach to productivity measurement is likely to be superior to other measures.[6]

Acquiring the necessary data to perform a total factor productivity study and then generating results is a difficult task.[7] Such an undertaking is certainly not possible in the time allowed for this proceeding. Without quantitative evidence, the Commission is not in a position to require a productivity offset greater than the one already implicit in the use of the GNP-PI in the price cap formula.[8]

Mr. Townsend does not address in a meaningful fashion the quantitative issues raised by the Commission in the Notice. Instead, he discusses in general and subjective terms various reasons why cable industry productivity may have increased and may increase in the future. The issue in this proceeding is not whether cable industry productivity has increased.

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[6] See Thomas C. Spavins, An Introduction to the Economics of Price Cap Regulation, January 31, 1990. Also see the Statement of Mark Schankerman, filed with Comments of GTE, p. 3.

[7] See the Statement of David Roddy, Appendix 3, pp. 4-5, and the references cited there.

[8] The GNP-PI reflects average productivity gains in the economy. See Spavins, p. 13.

It most certainly has. The relevant issue is whether the rate of productivity change has exceeded the rate in the economy generally, and if so, by exactly how much.[9]

Even the qualitative analysis provided by Mr. Townsend is flawed. For example, he claims that "increases in subscribership entail relatively few additional costs," since "one of the major costs of providing cable service is laying the cable in the first place."[10] He is alluding to the broadcast nature of the signal that provides basic cable television service. This means new customers do not consume switch ports, require individual channel capacity, and the like. But this analysis ignores the need to add new subscribers, to bill for service, and to allow for other customer interactions.

Mr. Townsend dwells at length on the additional channel capacity being enabled by the deployment of "glass" and compression technology. This is true, but it may have little to do with increasing the productivity of today's broadcast television service. A common misimpression by people who hear of the pending 200-500 channel systems is that those channels will be used to deliver dramatically more programming to every home on a broadcast basis. In fact, the real significance of being able to carry such a large number of channels is that they can be used to provide programs to individual homes on a subscriber demand basis.

With 200-500 channels available to a cluster of a few hundred homes, there will be on the order of a channel per home for delivery of programs on a customized or highly

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[9] The critical question of whether rates of productivity change can be sustained in the near future is discussed in the next section.

[10] P. 3.

targeted basis. The productivity of delivering such services is likely to be quite different than that of program television. Moreover, one cannot simply conclude that the new technologies will increase productivity of the services offered today.

Finally, Mr. Townsend attributes to regulated services productivity increases that should be attributed to unregulated services. For example, he points out that "[c]ompression will also sharply reduce the cost of delivering programming to the headend...."[11] Whether or not this is entirely accurate, it will be the cost of unregulated programming that will be impacted. Furthermore, any efficiencies in the programming market will automatically be reflected in regulated rates because changes in programming cost are treated as an external factor in the productivity formula.

As the above discussion demonstrates, Mr. Townsend's discussion of cable industry productivity is flawed in a number of respects. His analysis is even less useful for the critical issue of establishing likely future productivity trends.

C. Can Historical Productivity Trends Be Projected Into the Future?

Although Mr. Townsend has overstated the productivity gains from adding subscribers and channels, there is no doubt that there have been such gains. Even if these gains were to be reduced to a useful quantitative estimate, the Commission would have to have a basis for believing that they would continue at the same level in the future. It is unlikely that historical gains will continue at the same rate.

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[11] Para. 10.

Much of the historical gain in productivity for the cable industry is due to realizing economies of fill and economies of scale.[12] As the industry matures, these sources of productivity increase will become less important. In the Commission's AT&T price cap Proceeding, Laurits Christensen pointed out that:

> smaller firms tend to be able to exploit higher returns to scale than larger firms, and thus when their output grows their unit costs will drop more rapidly than for large firms. Hence, large firms will tend to have a higher level of productivity but a lower rate of growth of productivity.[13]

In other words, as firms grow into their markets, productivity increases become harder to sustain. Cable systems now pass 96 percent of all homes, and almost two thirds of homes passed.[14] As a result, any large increases in productivity achieved by increasing the number of subscribers are largely completed at this point. To the extent that LEC Video Dial Tone offerings provide additional alternatives to potential cable subscribers, the growth in penetration might be expected to slow even further.

As for productivity increases that might flow from increasing the number of channels carried, the Commission has indicated that it is considering ways to reflect the effect of channel additions or deletions on price capped rates.[15] As discussed above, channel availabil-

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[12] Economies of fill result from more intensive use of a given system; economies of scale are the result of increasing overall system size.

[13] See Statement of Dr. Laurits R. Christensen, Productivity Adjustment in the Price Cap Proposal, filed by AT&T in CC Docket No. 87-313, .

[14] See National Cable Television Association, Cable Television Facts, June 1993, p. 1-A.

[15] See Third Notice of Proposed Rulemaking, paras. 133-144. To the extent a significant fraction of future cable industry productivity change might be attributed to this factor, the appropriateness of requiring even average economy-wide productivity gains to be flowed

ity in most systems is already well in excess of the number being used for basic and cable programming service. Depending upon how the provision of cable service evolves under regulation, any further gains in channel capacity due to the deployment of fiber optics and compression may largely accrue to the benefit of new video and non-video services. Therefore, the productivity of existing regulated services might not be greatly impacted.

One might argue that increasing channel capacity in a given system would lead to a substantially lower cost of the basic service channel component of that system, implying a resulting increase in productivity. But given the cost of the compression technology, and other equipment required to derive the benefits of the increased capacity, we are not aware that any such reduction has been projected, nor does Mr. Townsend attempt to make this argument.

Finally, the imposition of regulation itself will likely reduce future productivity growth in the cable industry. The 1992 Cable Act imposes substantial burdens on the cable industry, even apart from rate regulation. Compliance with these regulations will obviously not be costless.

We conclude that even if a satisfactory measure of total factor productivity (or any other measure of productivity) were available, there would be no reasonable basis for determining the future trend in productivity that might be expected.

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through is called into question. If the resulting rates do not allow reasonable profits to be made, the benefits of benchmark regulation will be sacrificed.

D. Is there any correlation between cable system and LEC productivity, and, more cogently, between the respective changes in their productivity?

Having failed to produce a useful measure of historical productivity change, or a satisfactory analysis of what future trends might be expected, Mr. Townsend simply concludes that the productivity factor used for the LEC price cap formula should be used. The basis for this conclusion is apparently that LECs and cable companies use some of the same technologies. However, the services, architecture, technology, and operation of cable systems and LECs are so different as to render any such comparison meaningless.[16]

Figures 1A and 1B show, respectively, the classical cable system and LEC architectures. The cable architecture is designed to broadcast the same signal from the headend to all subscribers on a non-switched basis. Program selection from the spectrum of channels delivered occurs at the premises. It thus utilizes a tree and branch topology in which the same signal is delivered onto all the branches of the tree. Due to the broadband nature of the signal, broadband coaxial cable is utilized as the transmission medium. The headend, while centrally located in the topology, has the relatively minor role of cross-connecting programming signals (whether generated locally at the headend or received from other sources, such as satellite circuits) to channels on the distribution system on a relatively fixed basis.[17]

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[16] Dr. Mark Schankerman makes the same error. See p. 20.

[17] That is, a given signal source is coupled to a particular channel over an extended period of time which is considerably longer than the duration of any one program selection by a subscriber.

Figure 1A: Traditional Cable System Distribution Architecture

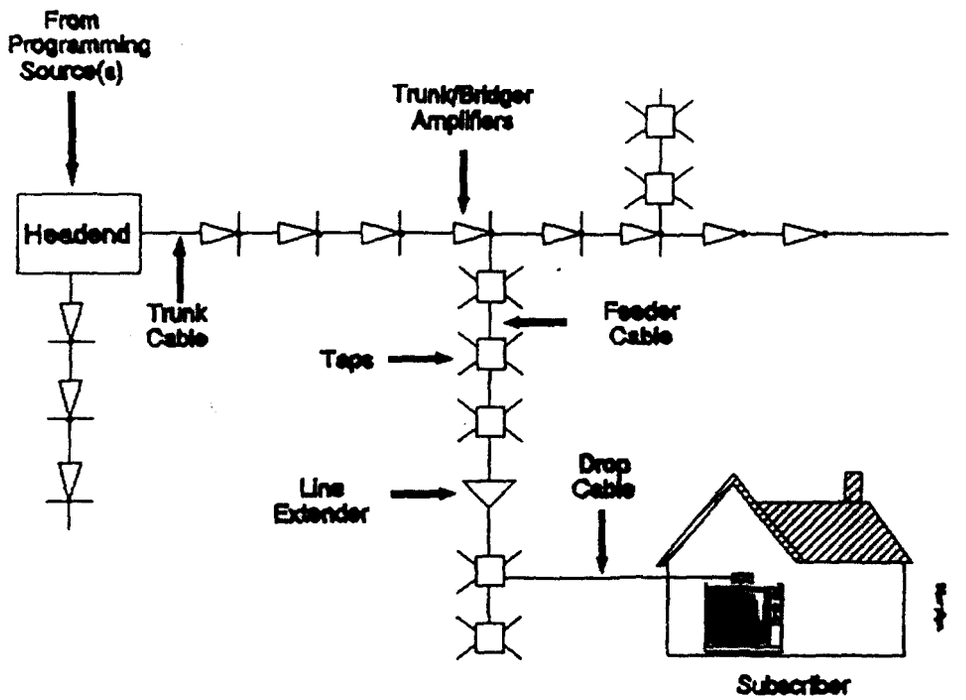
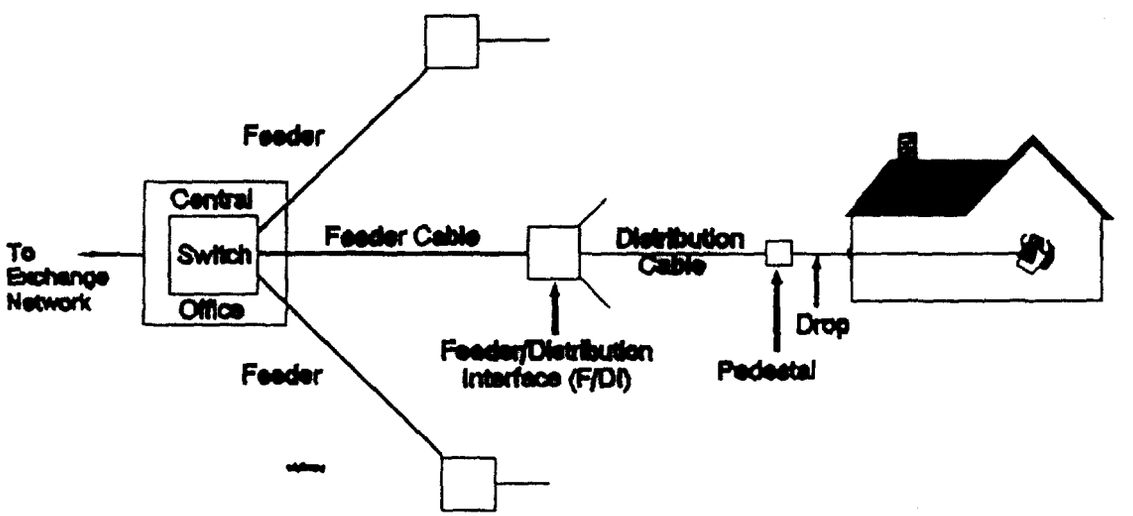


Figure 1B: Traditional Telco Distribution Architecture



By contrast, the LEC architecture transports a separate signal between the central office (CO) and each premises using a star topology.[18] In this topology, each premises has its own circuit between it and the CO. This circuit might physically be a separate wire pair, or it might be one voice channel on a digital carrier system on which a number of such channels are multiplexed. Typically, the former holds in the distribution portion of the network, while the latter is increasingly true in the feeder portion of the network.

The CO plays a central role in the architecture, as it must cross-connect a premises "loop" to another loop or the interoffice portion of the network on a demand basis, and thus includes the key switching function.[19] One of the primary differences between the cable and local exchange architectures is that the headend supports only static connections between distribution and programming sources in the case of cable, while the CO provides on-demand switched connections in the case of the local exchange.

Figures 2A and 2B show, respectively, the way in which fiber optic transmission is utilized in cable systems and the local telephone network.[20] The uses appear to be similar, although this is misleading. In each case, fiber is extended some distance from the headend/CO into the distribution network. In the cable television network it terminates at a

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[18] Or what is sometimes called a double-star topology. There is, in effect, one star emanating from the Central Office and a second from the Feeder/Distribution Interface, as the Figure shows.

[19] That is, for the duration of a call, based on instructions received by the terminal at the customer's premises.

[20] This discussion focuses entirely on the portion of the network from the headend/CO to the premises.

Figure 2A: Fiber Deployment in Cable Network

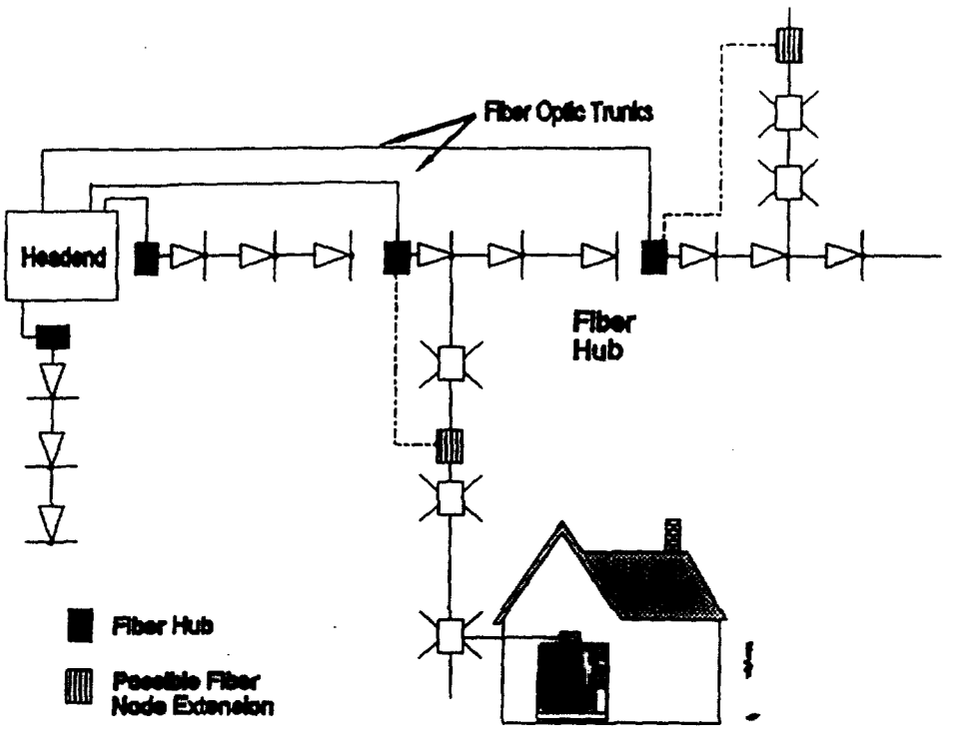
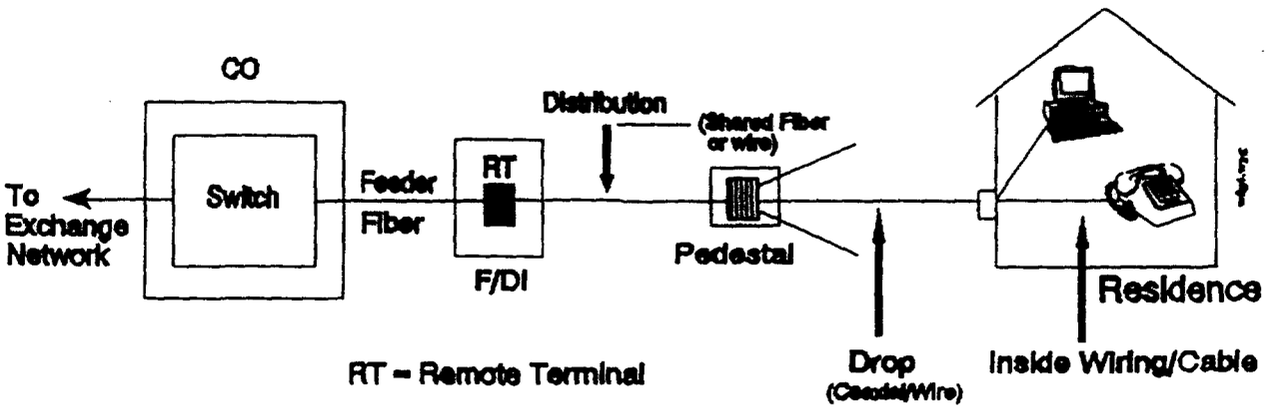


Figure 2B: Fiber Deployment in Telco Network



fiber hub, with possible extension to a fiber node located closer to the subscribers. In the LEC network, it terminates at a remote terminal at the Feeder/Distribution Interface, with possible extension to a pedestal near the subscriber premises.

But beyond this superficial similarity, fiber optics transmission is utilized quite differently in cable systems and telephone networks, at least as it is being deployed at present. In the case of a cable system, it is only a one-for-one replacement of the broadband coaxial cable as the carrier of a single broadband signal destined for all premises. Efficiency is only gained to the extent that the fiber is cheaper to install and operate than the coaxial cable.

By contrast, fiber in an LEC network is used to multiplex many individual premises signals onto a single fiber-based carrier system. To the extent that per-circuit costs are considerably lower on this fiber system than on either individual wire pairs or copper-based carrier systems, considerably greater efficiencies will result from the use of the fiber, in addition to whatever operational advantages there are for fiber versus copper-based systems.

Other significant differences between cable systems and telephone networks, and concomitant differences in productivity, are numerous. One of the major recent drivers of LEC productivity is the rapidly falling cost of switching. Moreover, LEC switching is amenable to the addition of intelligent call processing, which can increase productivity. As a final example, telephone companies can experience productivity gains through careful design of their switching hierarchy (CO and tandem switching), because they can "milk" the

productivity gains inherent in proper traffic engineering.[21] Due to the lack of switching, cable systems can not be expected to show the same productivity trends as LEC networks do in any of these regards.

The point of the foregoing discussion, is that there is little similarity between cable systems and LEC networks that would provide grounds for the naive assumption that productivity in cable systems and telephone networks should bear any relationship to one another. Nor should one expect the productivity changes due to the deployment of new technologies to be the same. Today's cable systems primarily deliver a broadband video broadcast service, using a tree and branch architecture and a non-switched headend. LEC networks support a variety of analog and digital narrowband services using a star architecture, copper wire as the primary transmission medium, and switching in the central office.[22] Such evident differences extend into the details of equipment utilized, deployment and operation of the equipment, and the like.

Much is made of the fact that LEC networks and cable systems are tending to converge towards greater commonality in services supported (a full spectrum of broadband and narrowband video and telecommunications), architecture (star topology to customer clusters, switching at a central point), and technologies (fiber optics transmission, fast packet

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[21] In normal telephone traffic engineering, the number of calls per trunk, and hence the percentage utilization of each trunk, increases as the size of the trunk group increases. Designing the local network hierarchy to take advantage of this fact thereby increases the overall efficiency of the network.

[22] Fiber deployment in the plant of the Bell Operating Companies is limited. In 1991, less than five percent of total fiber/wire miles were fiber. See Jonathan M. Kraushaar, Fiber Deployment Update, FCC, March 1992, Table 12.

switching). This convergence is happening to some extent, although it is in its early stages at present.

In many details, the telephone networks and cable systems may remain quite different. For instance, while the LECs tout the use of Broadband ISDN, in which all services are delivered using Asynchronous Transfer Mode (ATM) or another fast packet switching technology, cable companies are considering a hybrid architecture in which existing one-way channels are delivered in a conventional fashion, while video-on-demand and other new services are delivered using a packet switching technology like ATM.[23] The cable companies are hedging their bets on the use of fast packet switching, due to its yet-unproven ability to deliver all services in an efficient, cost-effective fashion.

Even if one assumes that the ultimate architectures will be identical, that would not imply that productivity changes should be the same for telephone networks and cable systems. The two would be converging to the same end from dramatically different starting points. Therefore, the productivity changes would likely be quite different. Even the argument that once the two do converge, they should show similar productivity changes thereafter, is largely irrelevant. Convergence is not likely to be completed for many years, if not decades.

III. ECONOMIC EFFICIENCY DOES NOT REQUIRE "REGULATORY PARITY"

The underlying economic principles that should guide cable regulation are correctly stated by Dr. Emmerson:

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[23] This hybrid architecture utilizes a single transmission medium, but the two kinds of service delivery occur in different portions of the frequency spectrum on that medium.

> ...it is important for the Commission to promote the economic efficiency associated with ompetition. Additionally, it is important for the Commission to encourage an optimal rate of development for new products and services and the optimal rate of adoption of new technologies.[24]

However, the "regulatory parity" advocated by Dr. Emmerson will actually make these goals more difficult to achieve. Unnecessary regulation, whether applied to LECs or to cable companies, will reduce economic efficiency by increasing costs and introducing distortions.[25] This underlying fact has guided the Commission in a series of deregulatory activities undertaken over the past two decades.

Dr. Emmerson's efficiency concerns are apparently grounded in the fear that cable companies will provide traditional local exchange services at inefficient prices or that LEC provision of traditional cable services will be unfairly handicapped. This fear is ungrounded because the two industries face radically different market incentives.

A. Cable Companies Will Not Have Incentives to Price Local Exchange Services Inefficiently

A large part of Dr. Emmerson's concern is apparently that the cable industry will compete unfairly as it enters the local telephone business. For example, he recites the traditional concerns that occur when regulated monopolists enter new markets. Chief among these concerns is cross-subsidy. There are several reasons why this will not be a concern.

As Dr. Emmerson recognizes, cross-subsidy requires that a firm disguise above cost prices in less competitive markets through cost misallocation in order to reduce the price in

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[24] P.1.

[25] See Daniel Kelley, Economics of Cable Television Regulation, filed with Comments of Time Warner, January 27, 1993, pp. 17-19.

the competitive market. This strategy is rational only when prices in the less competitive market are constrained by rate of return regulation, which is not the primary means by which the Commission intends to regulate the cable industry. Instead, the Commission has adopted benchmark regulation as its primary means of regulating the cable industry.

Under benchmark regulation, prices are established through comparisons with prices established in markets that the Congress has determined to be subject to competition. Firms subject to benchmark regulation will have no incentive to underprice local exchange services because such actions will not affect the benchmark rate. Thus, the incentives for inefficient pricing that Dr. Emmerson discusses will be largely absent from the cable industry.

Rate of return regulation will be a backstop form of regulation in cases where benchmark rates are inadequate for particular firms. It is logically possible that a cable company might have an incentive to show that costs incurred to provide services that are not regulated under the Cable Act should be recovered from customers of regulated cable services or equipment in order to achieve prices above the benchmark. However, this is unlikely. Rate cases will be expensive and time-consuming. Cable operators are not likely to resort to the risky and expensive rate regulation process in order to engage in anticompetitive cross-subsidy in local exchange markets.[26] Review of the comments filed in this proceeding shows that the cable industry is not anxious to embrace rate of return regulation. The focus of many companies is to find ways to improve or build on the benchmark process so that rate cases can be avoided.

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[26] Once a rate of return proceeding is begun by a cable operator, it is possible that the Commission or a local regulator could find that rates should be reduced below the benchmark.